

RECEIVED

MAR 6 1995

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of

Preparation for International)
Telecommunication Union World)
Radiocommunication Conferences)

IC Docket No. 94-31

DOCKET FILE COPY ORIGINAL

COMMENTS

of the

NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION

on the

SECOND NOTICE OF INQUIRY

These comments are submitted on behalf of the National Oceanic and
Atmospheric Administration (NOAA).



Richard Barth
Director
Office of Radio Frequency Management

No. of Copies rec'd
List ABCDE

09

The National Oceanic and Atmospheric Administration (NOAA) is the Federal agency responsible for warning the public about weather hazards, including thunderstorms, tornadoes, floods, and droughts. NOAA tracks hurricanes and provides early warnings to threatened populations. It provides wind information to fire fighters, so they can avoid entrapment by flames and optimize their placement of equipment and personnel. NOAA tracks volcanic ash in the sky and warns aircraft in flight so they can avoid it. NOAA's weather forecasts help farmers in planting and protecting their crops, and fishermen in their pursuit of catch. NOAA's warnings protect aircraft and boaters from the hazards associated with rough weather, and make travel safer for all of us.

NOAA does these things by collecting and analyzing meteorological data. It collects these data by a variety of techniques which include geostationary and polar orbiting satellites, radiosondes, radar and other ground-based sensors. If NOAA is to continue to provide these services to the public, its means of data collection must be protected. These sensors all use meteorological spectrum.

The frequency allocation tables make a limited number of bands available to meteorology. Some of them have been proposed for alternative uses in the Commission's Second NOI. These include the 137-138 MHz band used to transmit data collected by NOAA's satellites and the 1675-1710 MHz band used

both for satellite downlinks and radiosondes. It is essential that any additional services permitted to operate in these bands be fully compatible with meteorological operations. No degree of personal convenience and improved trade balance promised by industry can compensate for the loss of life and property that will result from damaging the data collection capability of the world's meteorological community.

It must be understood that meteorologists do, in fact, operate as a global community. In a process coordinated by the World Meteorological Organization (WMO), radiosondes worldwide are launched at the same time to provide a global snapshot of air movement, pressure and temperature. The data collected are immediately shared with other administrations and fed into computerized prediction models which produce weather forecasts. Because weather is a global and not a local phenomenon, missing or damaged data from one geographical area will adversely affect forecasts made elsewhere. It is therefore not sufficient to protect NOAA's operations; American forecasts will suffer if data collection is harmed in other parts of the world.

With these facts in mind, we will discuss specific proposals contained in the Second NOI.

137-138 MHz

NOAA's polar orbiting metsats use this band to send Automatic Picture Transmissions (APT) which are received not only by NOAA, but by countless government agencies, schools, businesses and hobbyists around the world. Reception of these signals is popular both because of the usefulness of the information supplied and because of the simple nature of the equipment required in this band. Direct Sounding Broadcasts and beacon signals from each satellite are also transmitted in this band.

Before the 1992 World Administrative Radio Conference (WARC-92), NOAA was approached by representatives of the fledgling Mobile Satellite Service (MSS), which wanted to share the band. NOAA agreed to move its downlinks to two 150 KHz sub-bands centered at 137.1 MHz and 137.9 MHz to minimize the mutual interference that would result from MSS operations. It was agreed at that time that the MSS would remain secondary in four mid-band segments used by NOAA until 1 January 2000, and would remain forever secondary in the segments NOAA would use in the future. Following NOAA's relocation into the two segments at the band edge, the MSS could claim primary status in the segments NOAA had vacated. The details of these agreements, slightly modified by the intercession of other administrations, were adopted by WARC-92.

These downlinks are expected to continue indefinitely. Their characteristics--center frequency, bandwidth and modulation--are expected to vary, both because of evolutionary changes to NOAA's spacecraft and as a result of the "convergence" of NOAA's satellites with meteorological satellites operated by the Department of Defense. As noted in the NOI, the precise nature of the changes that will result from these factors is not known, and it is accordingly impossible to predict with confidence when NOAA's evacuation from the mid-band will be complete. The Commission's use of square brackets surrounding the effective dates of the proposed changes is therefore appropriate.

Because of the importance of the service provided by metsats in this band, it is essential that they continue to be provided the protection granted them under the agreements made by NOAA and the MSS industry. NOAA is not the only operator of metsats which use the 137-138 MHz band. China uses this band for its FY metsat series. The Russians also plan to use it for their METEOR-3M satellites. It is reasonable to assume that the band will also be used by the administrations whose intervention resulted in the extension of the upper metsat band segment to 138 MHz.

1675-1710 MHz

It is a matter of record that a Region 2 MSS allocation in this band came about because it was promised, and widely believed, that the band could be used by the

MSS without injury to the met aids and metsat services which already had primary allocations. WARC-92 made this belief manifest in RR 735A, which requires that the MSS "...shall not cause harmful interference to, nor constrain the development of, the meteorological-satellite and meteorological aids services...".

To date, the ITU-R has reached no final conclusions concerning sharing between metsats and the MSS, despite numerous studies on this subject that have been done since WARC-92. Further, not a single MSS system has been built, and any conclusions that may be reached prior to WRC-95 will be conjectural rather than being based on hard evidence.

There is even less basis for an assumption of compatibility between the MSS and met aids. Only within the past few weeks has WP-7C taken on the study of this subject and, given the nature of radiosonde operations, any belief that sharing will be easy appears to be based more on wishful thinking than on a realistic appraisal of the facts. Both the Commission's Industry Advisory Committee (IAC) and ITU-R's SG8D have produced output documents which are pessimistic about the possibility of successful sharing between radiosondes and the MSS.

It would be entirely inappropriate for the United States to propose deletion or modification of FN 735A. MSS proponents claim they can operate compatibly with metsats and met aids. If this is true, then the existence of FN735A will not

affect them. Only if sharing is not feasible will removal of that footnote benefit the MSS, and then its continued presence will be essential to protect meteorological operations. This was its original purpose. The U.S. position regarding FN 735A should be to maintain it with no change.

It is premature for the United States to propose an expansion of the MSS allocation in this band. There are no studies showing that MSS sharing with radiosondes is possible, and there are indications that it is not. There have been preliminary studies, but no final decisions, on the feasibility of sharing with metsats. In the face of this much uncertainty, the use of this band by the MSS should not be encouraged. When the Region 2 allocation was proposed at WARC-92, the United States opposed it and lost. It could lose even more by supporting its expansion now.

Agenda for WRC-97

It has been suggested that the failure of WRC-95 to act in accordance with the desires of the MSS should be cause to clear the WRC-97 agenda and fill it with MSS issues. We disagree. The NOI notes, in paragraph 93, that the preliminary agenda for WRC-97 provides for consideration of several matters of importance to meteorologists worldwide, to include:

- * Resolution 710 (WARC-92), on the need to upgrade to primary the allocation of the meteorological satellite service and Earth Exploration Satellite (EES) Service in the band 401-403 MHz;
- * Recommendation 621 (WARC-92), covering worldwide allocation for wind profiler radars;
- * Recommendation 711 (WARC-79), on coordination of earth stations;
- * Resolution 712 (WARC-92), covering metsat Appendix 28 coordination contours and EES allocations between 8-20 GHz.
- * Review of Earth Exploration Satellite allocations above 50 GHz.

These proposals have been a U.S. priority for some years, and it had originally been hoped to have them on the agenda for WRC-95. A number of issues perceived by some to be more critical have caused them to be placed on the agenda for 1997. It would be unwise to consider postponing them further.

The 401-403 MHz band is used for metsat uplinks, for example from Data Collection Platforms or DCPs. These platforms are typically used to collect meteorological information from sensors so remotely located as to have no other means of data transmission. Typical DCP sensors measure stream height, snow pack depth and temperature in isolated mountain areas. This information is used to predict floods and potential droughts. Other DCP sensors measure ocean temperatures and current velocity from ships and floating buoys, and upper atmosphere temperature and pressure from aircraft in flight. These data are

critical to forecasting operations, and require protection not provided by their current secondary status. Upgrading to primary is considered crucial, and there appears to be no little or no opposition to this proposal worldwide.

Wind profiler radars have been under development for several decades, but only in the past few years has a prototype network of significant size been built which has demonstrated incontrovertibly the importance of the data they can provide to forecasters. The question of appropriate spectrum was brought to the ITU not by any administration, but by the head of the World Meteorological Organization in a personal letter to the Director of the CCIR. As ITU-R TG8/2 expects to complete its work in time for WRC-97, and the WRC should be prepared to consider it.

The coordination of satellite ground terminals has been largely standardized under the procedures of Appendix 28. Metsat ground terminals have been an exception, since representative coordination criteria are not provided in App28. Particularly now, when proposals abound to share metsat bands with commercial systems, it is essential that these questions be answered in a timely manner.

a Presidential Decision Directive requires NOAA to operate LANDSAT, which downlinks environmental data in the 8025-8400 MHz band. The EES allocation

in this band is primary in Region 2 and secondary elsewhere, and needs to be upgraded.

The science of meteorology will directly benefit from the review of allocations for the EES above 50 GHz. A number of countries have expressed a strong interest in the use of millimeter wave sounders to measure temperature and humidity of the mesosphere, and NOAA will begin the use of such sounders with its first NOAA-K satellite in 1996. Not all millimeter wave bands needed for this work are currently allocated to the EES service. Discussions between NOAA and the Defense Department are ongoing, and will result in proposals for a U.S. position on this subject at WRC-97.

The United States should not allow itself to concentrate on the requirements of the MSS to the exclusion of other, equally significant needs.